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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/344,190	06/24/1999	KENNETH SCOTT KUMP	15-XZ-4971	8765

7590 12/18/2003  
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EXAMINER

CHOOBIN, BARRY

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 12/18/2003

18

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/344,190

Applicant(s)

KUMP, KENNETH SCOTT

Examiner

Barry Choobin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9-12,15-25 and 27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-12,15-25 and 27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 14, 2003 has been entered.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1, 3 – 7, 12 and 15 - 25 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Ergun et al (U.S. Patent 6,298,109).

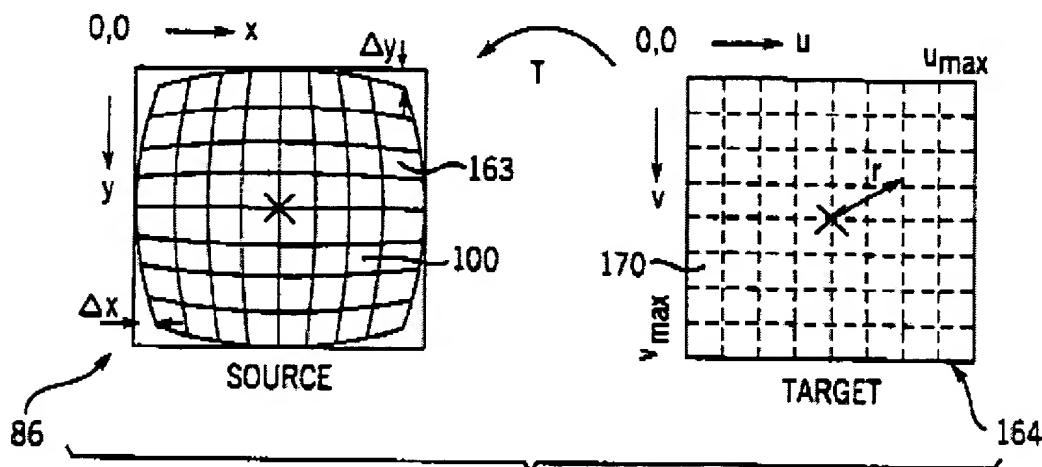
As to claim 1, Ergun et al disclose a method for determining a dynamic range of a digital medical image for a medical imaging system, the digital medical image containing a clinical region, comprising:  
dividing a digital medical image into at least two bands of predetermined width (refer for example to Fig .19);

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**Oct. 2, 2001**

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**US 6,298,109 B1**



**FIG. 19**

determining whether the digital medical image within said at least two bands includes at least one non-clinical region (column 2, lines 43-46 wherein control of the exposure of the imaged object based only on the portion of the image attenuated by the object is provided corresponding to non clinical image region);

masking non-clinical regions based on at least one of gray scale maximum and minimum values for the non clinical region comprising one of a raw radiation region and

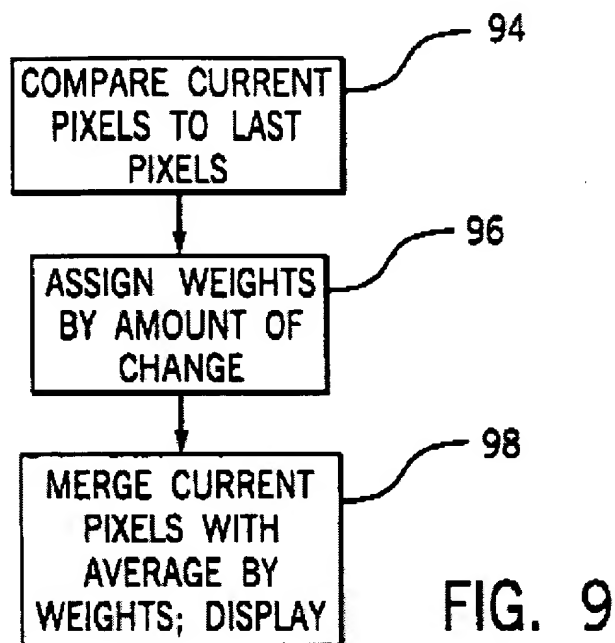
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a collimated region (refer for example to column 16, lines 28-40 wherein the image 208 is then used to derive a scatter map. Referring to FIG. 23, generally the amount of scatter at a given point will be a function of how many x-ray photons are received at points adjacent to the given point. For example, comparing the image 208 to a theoretical scatterless image 228 generally in an attenuated region 230 of the image 208 (e.g., under the spine 200 ), scatter will increase the apparent value in the image 208 as a result of radiation from nearby low attenuation regions scattering into the high attenuation region 230. Conversely the apparent value at a low attenuation region 232 will be decreased because of the scatter into the high 5 attenuation region .);

calculating a dynamic range for a clinical region (column 4, lines 40-45, Fig.6 and column 7, lines 41-66 wherein the CCD 84 provides a complete set of radiation data for an entire image 86 (a frame) periodically once every "frame interval" so that real time image of a patient placed within X-ray beam 80 may be obtained, corresponding to calculating a dynamic region in this portion of claim).

As to claim 3, Ergun et al disclose the digital medical image is divided into one horizontal and vertical bands (column 11, lines 13-32 and Fig. 19).

As to claim 4, Ergun et al disclose differentiating said digital medical image, said determining step calculating a position of the non clinical region based, on a result of said differentiation (column 11, lines 33-53 and Fig.9 and Fig.11).



As to claim 5, Ergun et al disclose calculating at least one threshold based on a dynamic range of the digital medical image, said at least one threshold being used to identify at least one of maximum and minimum values for the non-clinical region (column 11, lines 53-60 and column 12, line 59- column 13, line 3).

As to claim 6, Ergun et al disclose determining step discriminates at least one of histogram maximum and minimum values for a non-clinical region based on at least one predetermined threshold (column 12, line 59 through column 13, line 3).

As to claim 9, Ergun et al disclose generating a histogram of the digital medical image, said masking step masking gray scale levels from the histogram that exceed predetermined upper and lower thresholds (column 11, lines 33-53).

As to claim 11, Ergun et al disclose a medical diagnostic imaging system for controlling a dynamic range of a digital medical image to be displayed, comprising: a segmentation module identifying clinical and non-clinical region within a digital medical image, said non-clinical regions comprising at least a collimated region (refer for example to column 16, lines 28-40 wherein the image 208 is then used to derive a scatter map. Referring to FIG. 23, generally the amount of scatter at a given point will be a function of how many x-ray photons are received at points adjacent to the given point. For example, comparing the image 208 to a theoretical scatterless image 228 generally in an attenuated region 230 of the image 208 (e.g., under the spine 200 ), scatter will increase the apparent value in the image 208 as a result of radiation from nearby low attenuation regions scattering into the high attenuation region 230. Conversely the apparent value at a low attenuation region 232 will be decreased because of the scatter into the high 5 attenuation region .);

a processor dividing the digital medical image into at least two bands (refer to Fig.19), wherein said processor is capable of masking non-clinical regions based on at least one of gray scale maximum and minimum values for the non clinical region comprising one of a raw radiation region and a collimated region (refer for example to column 16, lines 28-40 wherein the image 208 is then used to derive a scatter map. Referring to FIG. 23, generally the amount of scatter at a given point will be a function of how many x-ray photons are received at points adjacent to the given point. For example, comparing the image 208 to a theoretical scatterless image 228 generally in an attenuated region 230 of the image 208 (e.g., under the spine 200 ), scatter will increase the apparent value in the image 208 as a result of radiation from nearby low attenuation regions scattering into the high attenuation region 230. Conversely the

apparent value at a low attenuation region 232 will be decreased because of the scatter into the high 5 attenuation region .);

and a dynamic range module determining a dynamic range of a clinical region of the digital medical image based on the clinical region,(see claim 1) said dynamic range module determining a dynamic range of said clinical region within said at least two bands (see claim 1).

As to claim 15, Ergun et al disclose segmentation module identifies non-clinical regions based on variations in gray scale levels of the digital medical image (column 11, lines 13-32 and Fig.13).

As to claims 17 and 18, Ergun et al disclose the segmentation module discriminates the non-clinical region based on at least one gray scale threshold value (column 11, lines 53-60 wherein thresholding process or subtraction disclosed in reference to background pixels).

Claims 7, 10,12,16,19, 20 - 25 and 27 are similarly analyzed and rejected.

### **CONTACT INFORMATION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry Choobin whose telephone number is 703-306-5787. The examiner can normally be reached on M-F 7:30 AM to 18:30 PM.

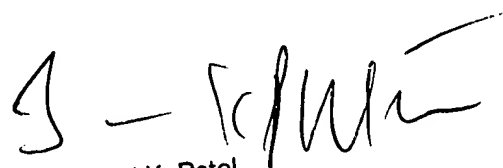
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 703-308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Barry Choobin  
December 12, 2003

  
Jayanti K. Patel  
Primary Examiner